

under the special guidance of Prof. Verneau, by whom the greater part of its exploration had been carried out. As is well known, this cave yielded several human skeletons, all of the Cro-Magnon type, the most deeply interred lying in association with bones of the reindeer. Several of these have been left *in situ* preserved under glass; while in a small museum erected, close by the mouth of the grotto, at the expense of Sir Thomas Hanbury, are arranged the bones and other objects discovered in it. After a hasty visit to the Grotte du Cavillon the congressionists proceeded to inspect the famous Grotte des Enfants under the same excellent guidance. The two celebrated skeletons from the lowest *foyer* of this cave, the types of Verneau's negroid *Race Grimaldi*, are safely preserved in the Monaco Museum. These discourses *sub divo* were necessarily succinct, but they were supplemented by fuller addresses of extreme interest during the following forenoon by the Abbé de Villeneuve, Profs. Boule and Verneau, and M. Cartailhac, under whose joint authorship a beautifully illustrated volume on the results of their exploration of these caves will shortly be published by the generous provision of the Prince of Monaco.

The next day's programme was reserved specially for papers on the engravings and frescoes on the walls of prehistoric caverns. The Abbé Breuil presented a communication on the process of the evolution of art during the Reindeer age, a *résumé* of a large work on which he is engaged, resulting from his laborious copying of the wall pictures of many caverns in collaboration with his colleagues Cartailhac, Capitan, Peyrony, and Bourrinet. The most important as well as most attractive item, however, was the exhibition by Dr. Capitan of a long series of lantern-slides of mural, engraved, and polychrome pictures—the latter in colour—most carefully copied by himself, the Abbé Breuil, and their associates named above, under the most trying and difficult conditions in the grottoes—more frequently than not far in their dark, damp, and cramped recesses—of Mas-d'Azil, Combarelles, Marsoulas, Bernifal, Les Eyzes, de Freye (Dordogne), la Mouthe, Altamira, Font de Gaume, de Teyjat, La Greze, and others. The number and variety of subjects depicted indicates powers of accurate observation and a mastery of hand in the arts of sculpture and drawing at that early age which are really astonishing, and it is evident that this wonderful capacity for art was the common heritage of Palæolithic man in all parts of Europe. *Rhinoceros merckii* and some dozen other extinct quadrupeds appear to have been his favourite studies. *Bison priscus*, however, was the species most frequently and most characteristically represented, being perhaps the commonest or the most dreaded member of his fauna. The human figure was less frequently, and always rudely, portrayed, and usually with monstrous or grotesque faces, suggesting that actors in some ceremonial were intended to be depicted in masks, recalling the dance-masks of the Chiriqui and Arizona Indians. Further papers on the same theme occupied also a great part of the following morning's sitting, at which the most interesting exhibition was a series of burins and scrapers of flint from the Grotto of Eyzes, exquisitely manufactured of every degree of fineness—some of them worked at both ends—to serve the manifold purposes of the artist. They were unquestionably the very tools by which the wall pictures beside them had been executed. With the exception of a short note by Dr. Arthur Evans (who on rising was very warmly greeted by the congress), on the Ægean, Minoan, and Mycenaean epochs, the remainder of the communications on the day's programme dealt with the Bronze and Iron age in Europe.

The sitting of the forenoon of Saturday, April 21, was given up chiefly to the archæology of northern Africa. The most important communication was M. Flammaud's, on his discovery in the Sahara of megalithic monuments of new shapes and of peculiar sculpture, and on the numerous evidences he had obtained of contact between the interior of Lybia and Egypt in the Neolithic age. The afternoon was spent on an excursion through beautiful scenery *via* the well-known *Tropæa Augusti* at La Turbie to the mysterious prehistoric entrenchments occupying the summit of Mont Bastide, as that of many of the other foot-hills of the Maritime Alps. The congress assembled on Sunday afternoon for the formal closing ceremonies usual on such

occasions, the Prince of Monaco being again represented by his son, who, at the palace previous to the meeting, had, on his father's behalf, conferred the decoration of St. Charles on the presidents, the secretaries, and several of its more distinguished members, of whom Sir John Evans received the cross and ribbon of the Order.

Several social entertainments were given during the week "en l'honneur des congressistes," including, besides a reception at the palace, an evening performance of *Méphistofêles* and a *matinée* concert, both in the beautiful Casino Theatre.

For those—and they proved a goodly company—who could spare the time, a whole-day excursion, under the able leadership of M. Paul Gobry, to the prehistoric monuments—dolmens, tumuli, and entrenchments—in the neighbourhood of Grasse was arranged by the excellent committee of organisation as a pleasant termination to a very successful and profitable session of the congress.

SUMMER TEMPERATURES OF THE NORTH SEA.

THE "Bulletin Trimestriel" of the International Council for the Exploration of the Sea, for the period July to September, 1905, has just been issued. As the observations are for the summer months, they are naturally more numerous than in other seasons of the year, and an immense amount of material is dealt with. The increase in the number of surface observations, and the extension of the area from which they have been obtained, are specially noteworthy; a plate of nine charts showing the variations of mean temperature in the North Sea for ten-day periods, from July 1 to September 30, 1905, is added to the usual quarterly maps. These charts have been prepared by dividing the area into squares of 1°, and $\frac{1}{2}$ ° close to the coast, and the results checked by mean values from Dutch observations, worked up by a different method.

The sections drawn from the observations of the special steamers sent out by the different countries are very numerous in the narrower seas, forming a close network in the Baltic and the North Sea. A line north-eastward from Scotland defines the conditions across the northern entrance to the North Sea, but it is unfortunate that, except for some very useful lines running seaward from the coast of Ireland, and one section from Iceland to Færøe, information from the western section of the area is somewhat deficient, notably in the Færøe-Shetland Channel. It would be a great matter if observations in the depth could be carried further seaward to the south-west of the British Isles with the view of ascertaining the precise limit to which waters of Mediterranean origin penetrate northward, and in this connection an increase in the number of gas samples analysed would be of value.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The following is the text of the speech delivered by Prof. Love in presenting Prof. J. Milne for the degree of D.Sc. *honoris causa* at the Encaenia on June 20:—

In terrae motibus cognoscendis nemini profecto cedit Ioannes Milne. Hic ille est qui nova eademque plurima quaerendi instrumenta commentatus, quibus vim terrae motuum longinquis in locis redundantem emetiretur, ostendit tribus quibusdam momentis rem agi: duobus enim tremoribus medium terrae globum concutientibus succedere tertium latius patentem et in summo volitantem, sicut undam mare supereminentem. His repertis illud etiam consecutus est ut interioris terrae naturam et compagem certius cognosceret. Nullas profecto regiones non peragravit vir acerrimus, dum telluris superficiei studet, praecipuum vero laudem adeptus est quod rei publicae Iaponicae viginti annos inservit, Geologiae doctor insignis, fodinarum publicarum curator peritissimus. Ibi etiam sexcentas stationes disposuit omnia quae ad terrae motus pertinent et observantium et litteris mandantium. His etiam diebus patriae redditus in insula Vecti tale labor-

atorium constituit vir strenuus, eorum antesignanus qui hanc sectam secuti id agunt ut omnibus in terris eandem ipsi diligentiam praestent. Tantis tot strenuorum virorum laboribus nonne id aliquando fieri potest ut de caecis horum motuum causis paulo certiores fiamus?

CAMBRIDGE.—The Quick professorship of biology is vacant. The professor is to devote himself to the study of the Protozoa, especially such as cause disease. The stipend is 1000*l.* a year. The election will take place on July 26. Candidates are to send their names and references to the Vice-Chancellor by July 19.

Mr. R. A. Herman and Mr. H. W. Richmond have been appointed university lecturers in mathematics.

The Raymond Horton-Smith prize, for an M.D. thesis "On Changes in Sensation Associated with Gross Lesions of the Spinal Cord," has been awarded to Mr. H. Theodore Thompson, of Christ's.

The Gordon-Wigan prize of 50*l.* for a research in chemistry has been awarded to F. E. E. Lamplough, Trinity.

EARL CARRINGTON, President of the Board of Agriculture, will open the new buildings at the South-Eastern Agricultural College, Wye, and distribute the diplomas and prizes, on Wednesday, July 18, at 3.15.

THE Court of the University of Manchester has decided to confer the following honorary degrees:—D.Sc. on Prof. Emil Fischer, professor of organic chemistry in the University of Berlin, and on Prof. Adolf von Baeyer, professor of organic chemistry in the University of Munich; M.Sc.Tech. on Mr. Ivan Levinstein, and M.Sc. on Mr. James Grier, lecturer in pharmacognosy.

PROF. A. MELVILLE SCOTT, late 1851 Exhibition scholar from the University of Toronto, has resigned his position as professor of physics and electrical engineering at the University of New Brunswick to accept the office of superintendent of schools for the city of Calgary, Alberta. His successor will be Prof. W. H. Salmon, a graduate of Cambridge, now of King's College, Windsor, N.S.

NEW science buildings, built and equipped at a cost of 7000*l.*, were opened at Repton School on the occasion of the speech day, June 21, by Sir Oliver Lodge, F.R.S. The buildings are largely the result of the munificence of Lord Burton, until recently the chairman of the governing body. In the course of his address, Sir Oliver Lodge spoke of the importance of the study of science, and particularly of astronomy, in order that a better conception of the universe, of its magnitude, and man's place in it might be obtained.

It is announced in *Science* that the Woman's College of Baltimore has now received gifts amounting to 116,000*l.* Of this amount 100,000*l.* was needed to clear the college of debt, and 16,000*l.* will be added to the endowment fund. Mr. Andrew Carnegie gave 10,000*l.*, the Massey estate 10,000*l.*; other gifts range from small amounts to 6000*l.* We learn from the same source that Governor Higgins has approved a Bill appropriating 16,000*l.* for a school of agriculture at St. Lawrence University, with an additional 2400*l.* for maintenance. This school, it is understood, will be managed in cooperation with the authorities of the State College of Agriculture at Cornell University. By the will of Catherine L. R. Catlin, of New York, 2000*l.* is left to New York University.

In the House of Lords on Monday Lord Barnard asked the President of the Board of Agriculture whether he has been able to consider the representations made to the secretary of the Board, on December 5, 1905, by a deputation from universities, colleges, and agricultural institutions, and whether there is any prospect of an increased grant to such institutions. In the course of his reply, Earl Carrington said no money could be better spent than that which is applied to helping farmers to meet the fierce and growing competition which they have to encounter from all sides. Some time ago 4500*l.* was voted towards this object, and in 1906 the vote has risen to 11,500*l.* The sum is small, it is true, when compared with the amounts voted in other countries, but the country has

received the full value of the grant owing to the cordial cooperation and good work of the different county councils. He suggested that some inquiry should be held into the system of agricultural education. There has been no inquiry since 1888—nearly twenty years ago. If it should appear that there is good ground for an increase of grant, those who advocated such an increase would find their hands strengthened very considerably.

A MEETING of university extension students and others is to be held at Cambridge on August 2–28. The principal subject of study will be the eighteenth century, especially the period 1714–1789. Among the lectures arranged, the following, dealing with subjects of science, may be mentioned:—Cloud problems in astronomy, by Mr. A. W. Clayden; a total eclipse of the sun, by the Rev. T. E. R. Phillips; great astronomers of the eighteenth century, by Mr. Arthur Berry; the Milky Way and the clouds of Magellan, by Mr. A. R. Hinks; the dawn and progress of modern geology, by Dr. R. D. Roberts; great botanists of the eighteenth century, by Prof. W. B. Bottomley; great zoologists of the eighteenth century, by Mr. L. A. Borradaile; and the beginnings of the steam engine, by Mr. E. K. Hanson. Besides these purely scientific lectures, others of interest to students of the methods of science occur in the programme, such as those by Mr. H. Yule Oldham on the teaching of geography, and by Mr. E. A. Parkin on hygiene in schools. Practical courses in chemistry and botany, primarily for teachers, will also be held. Forms of entry and further information will be supplied by the Rev. D. H. S. Cranage, Syndicate Buildings, Cambridge.

IN the May issue of the Transactions of the Oxford University Junior Scientific Club is a thoughtful paper by Mr. M. H. Godby on the place of natural science in education. The spirit of the paper provides an encouraging sign of appreciation of the value of scientific studies, and serves to show that a generous recognition of the importance of a training in the methods of science is producing a beneficial effect upon the present generation of Oxford students. Mr. Godby first indicates the influence on British education exerted by Bacon in directing the attention of speculative thinkers to the importance of founding theories on knowledge gained from the senses, and subsequently refers approvingly to Herbert Spencer's insistence upon the necessity of training the body and the value of a scientific education. As indicative of modern tendencies at Oxford one or two of the writer's remarks may be cited:—"The man of science perhaps alone of all men understands and appreciates the value of working hypotheses, even when they are wrong." "A great charm, too, of science is that one can always appeal against the decisions of tutors and authorities to Nature herself, and so there is produced a freedom from the awe of authority which must tend to develop self-respect and to encourage independence and originality." "Science is more capable of arousing the interest of its students than other subjects. There is a sort of spirit of antagonism, a feeling that you are pitting yourself against Nature and trying to unravel her secrets, and this feeling is just what will always appeal to the sporting instincts of English boys." It is satisfactory to find that young Oxford is alive to the responsibility of the University for the growth of scientific knowledge.

REPLYING to a question in the House of Commons on Tuesday as to the action which the President of the Board of Education proposes to take on the report of the Departmental Committee on the Royal College of Science, &c.; and as to whether any reorganisation of the University of London is contemplated, with a view to the association with it of the proposed Technological College, Mr. Lough said:—The Board is at present engaged in the preparation of a scheme for the establishment of a new institution on lines corresponding as closely as possible to those recommended by the departmental committee. The Board agrees with that committee in regarding it as of first importance that there should be no delay in the organisation of the institution, and with the recommendation of the committee that its relation to the University of London should, in the first instance, be that of a "school of the University"—a recommendation in which the senate of the University

has informed the Board that it concurs. In considering the constitution of the new institution the Board has had under consideration the suggestion of the departmental committee (No. 94, p. 27) that, without delaying the commencement of the new institution's work, a Royal Commission should be appointed to consider whether changes could advisably be made in the character and constitution of the University which may make it desirable and possible to amalgamate the two institutions. It has also had before it the resolution of the senate of the University deprecating the appointment of such a Royal Commission within so short a period after the reorganisation of the University, and expressing the desire that opportunity should be afforded for conference between the Board and the Senate as to any changes of the kind suggested. In the course of the conference, which took place on March 9, between the Board of Education and a deputation from the University senate upon these matters, the suggestions thrown out by the University deputation seemed to be contingent, practically, upon the incorporation of the new institution within the University. As this would necessitate a prolonged delay in the starting of the institution, which the committee specially recommended should be avoided, the Board has found it impracticable to proceed on those lines, but is hastening as much as possible the preparation of a draft charter on the lines of the report of the departmental committee.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 5.—"On a Method of Obtaining Continuous Currents from a Magnetic Detector of the Self-Restoring Type." By L. H. **Walter**. Communicated by Prof. Ewing, F.R.S.

Magnetic detectors for wireless telegraph purposes have proved satisfactory for telephonic reception, but have not hitherto been capable of furnishing continuous currents suitable for use with recording instruments. The author has devised a new form of magnetic detector which is capable of furnishing both continuous and alternating currents, the former for recording purposes and the latter for telephonic reception. The apparatus consists of a form of differential dynamo, having two similar armatures on the same shaft. The armature cores are of iron or steel wires. The electromotive forces generated by the two armatures are opposed to each other and normally balance, so that no potential difference is detectable at the commutator brushes. Oscillations set up in the receiver aerial as a result of signals are led through the magnetic wire forming one armature core, causing it to take up a higher induction, and thus disturbing the balance, a continuous current being obtainable from the brushes so long as the oscillations persist. This current is utilised for actuating the recording instrument or relay. For simultaneous reception of the signals on the telephone, the alternating current generated as a result of the action of oscillations is taken off, by means of slip-rings and brushes, before it is commuted into unidirectional current.

May 17.—"Some Stars with Peculiar Spectra." By Sir Norman **Lockyer**, K.C.B., F.R.S., and F. E. **Baxandall**.

This paper relates to a few stars the spectra of which show certain peculiarities that make them not altogether conformable to any common type. The most notable of these stars are α Andromedæ, θ Aurigæ, α Canum Venaticorum, and ϵ Ursæ Majoris. They are all on the descending side of the Kensington curve of stellar temperature, the first three being of the Markabian type and the last of the Sirian type. A short account is given of the spectrum of each of these stars.

α Andromedæ has recently been found by Slipher, of the Lowell Observatory, to be a spectroscopic binary with a period of about 100 days. Prior to this, an investigation of the various Kensington spectra of α Andromedæ, taken in the years 1900-4, appeared to indicate slight changes in the relative intensity, position, and definition of some of the lines in the various photographs. There

does not, however, seem to be any regularity in these changes, either in the lines themselves or in the manner in which they are affected, so that it has not been possible to come to any conclusion as to their real significance. Additional photographs will be necessary to test whether the changes in the spectrum bear any relation to the period established by Slipher. The spectrum of α Andromedæ also shows a set of well-marked strange lines which do not occur in any other celestial spectrum, and for which records of terrestrial spectra afford no satisfactory clue as to origin.

θ Aurigæ and α Canum Venaticorum show several strange lines nearly identical in the two spectra, but entirely different from the strange lines of α Andromedæ. No terrestrial equivalents have been found for these stellar lines.

In ϵ Ursæ Majoris, the chief deviations from the Sirian type are the weakening of the silicium (group ii.) lines and the strengthening of the enhanced lines of chromium.

Entomological Society, June 6.—Mr. F. Merrifield, president, in the chair.—*Exhibits.*—Specimens of *Lomechusa strumosa*, F., taken with *Formica sanguinea* at Woking on May 26 and 29: H. St. J. **Donisthorpe**. Only two other British examples are known, one taken by Sir Hans Sloane on Hampstead Heath in 1710, the other found by Dr. Leach, in the early part of the last century, while travelling in the mail-coach between Gloucester and Cheltenham.—A case to illustrate a large number of the life-histories of Coleophorids, notes on which have appeared in the society's Proceedings or in the Entomological Record: H. J. **Turner**.—A few butterflies from Majorca, captured between April 8 and April 20: H. **Lupton**.—A specimen of *Crambus ericellus*, Hb., taken at Loughton, Essex, August 8, 1899, not previously recorded from further south than Cumberland; two specimens of *Nola confusalis*, H.S. ab. *columbina*, Image, taken in Epping Forest, May 5: S. **Image**. The first examples of this aberration were taken by the exhibitor at the same locality, May 22, 1905, and a specimen of *Peronea cristana*, F., the ground colour of upper-wings abnormally black, even more intensely black than in the ab. *nigrana*, Clark, also taken in Epping Forest, August 19, 1905.—The type of *Spathorhamphus corsicus*, Marshall, from Vizzavona, Corsica: J. H. **Keys**. This fine Anthribid was supposed by some coleopterists to have been an accidental importation into the mountainous regions of the island, but was no doubt endemic. Mr. G. C. Champion remarked that he had taken *Platyrrhinus latirostris*, in numbers, at the same locality, in the beech and pine forests (*Pinus laricio*) along the line of railway, above the tunnel.—Specimens of African Pierinæ found by Mr. C. A. Wiggins on February 2 settled on damp soil near the Ripon Falls, Victoria Nyanza, and caught, to the number of 153, at a single sweep of the net: Dr. F. A. **Dixey**. Eight species were represented; the examples were all males, and, with one exception, belonged to the dry-season form of their respective species.—Notes on Natal butterflies, received from Mr. G. H. Burn, of Weenen, and the four individuals of *Euralia wahlbergi*, Wallgr., and *E. mima*, Trim., captured by Mr. G. A. K. Marshall, near Malvern, Natal: Prof. E. B. **Poulton**. Prof. Poulton then exhibited Mr. Marshall's latest demonstration of seasonal phases in South African species of the genus *Precis*, the proof by actual breeding that *P. tukuoa*, Wallgr., is the dry-season phase of *P. ceryne*, Boisd. Prof. Poulton further showed 325 butterflies captured in one day by Mr. C. B. Roberts, between the eighth and tenth mile from the Potaro River, British Guiana, and directed attention to the preponderance of males.—*Papers.*—Some bionomic notes on butterflies from the Victoria Nyanza region, with exhibits from the Oxford University Museum: S. A. **Neave**.—The habits of a species of *Ptyelus* in British East Africa: S. L. **Hinde**, illustrated by drawings by Mrs. Hinde.—(1) Mimetic forms of *Papilio dardanus* (*merope*) and *Acraea johnstoni*; (2) Predaceous insects and their prey: Prof. E. B. **Poulton**.—Studies on the Orthoptera in the Hope Department, Oxford University Museum, i., Blattidæ; and a note on a feeding experiment on the spider *Nephila maculata*: R. **Shelford**.